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COR-0244  
Copy 2 of 6

1 December 1958

MEMORANDUM FOR : Special Assistant to the Director  
for Planning and Development

THROUGH : Director of Development and Procurement, DPS

SUBJECT : Exploitation of Equipment for CORONA  
Photography

REFERENCE (A) : Draft letter from ITEK [ ]  
dtd 19 Nov.1958.

(B) : Memo for SA/PD/DCI, Subject: Trip Report -  
Program Review Conference, WS/117L and  
CORONA, from Dir/OPS, dtd 25 Nov.1958  
(COR-0238)

(C) : Memo for Dir/D&P, Subject, as above,  
from SA/PD/DCI, dtd 26 Nov.1958.

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1. In response to [ ] Trip Report (Ref.B), specifically his recommendation concerning the need for an evaluation of the ITEK Vs. Eastman Kodak's processing equipment, [ ] visited Rochester on 26 November 1958 and discussed this subject with Mr. Green. Additional verbal instructions were also received from Mr. [ ] prior to this meeting. Many of the items covered in the discussions with [ ] are included in Mr. Bissell's memo dated 26 November, and consequently, it was possible to cover the majority of items referenced in this memorandum.

2. Mr. Green was already aware of much of the antagonism existing between ITEK and his Company concerning this processing equipment. This subject was first broached at the CORONA conference convened at PIC on 3 November. At that time, Mr. Green presented his evaluation of the ITEK processor, copy attached (Enclosure 1.). While [ ] memorandum indicates that he has, as yet, not been privileged to read the comments prepared by EK on this equipment, it was certainly through oversight if this was the case since copies of this evaluation report were freely distributed at the 3 November meeting.

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NRO REVIEW COMPLETED

This document contains information  
referring to Project CORONA

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3. During the meeting with Mr. Green on 26 November, the various deficiencies listed in Attachment (1) concerning the ITEK processor were reiterated and an inspection of the machine by [ ] verified these items. In addition, one very important point not covered by Mr. Green's evaluation was discovered. The red light inspection system for the ITEK processor is located directly over the electronic control system which regulates the operation of the equipment. The film is wet at the time that it passes over the red light access port. There is no attempt to squeeze off excess water prior to the time film passes over the inspection port. Consequently, excess water drips down into the electronic control assembly. This electric control panel is not moisture-proof and no attempt has been made to seal this assembly. This has caused numerous electrical shorts and has badly corroded the electrical relays and contacts of this assembly. It is badly rusted and very obviously in need of maintenance. Droplets of water collecting on the inside glass of the red light inspection port present an additional problem. This water diffuses the light and makes visual inspection and exposure determination extremely difficult and induces a variable which could produce an erroneous exposure reading. When this was called to Mr. Green's attention, he stated that he had been informed by the ITEK representative [ ] that this electronic control required the services of an expert and that EK was not to attempt to adjust or clean this assembly. It is apparent that the location of the exposure control device on the ITEK processor is a serious design fault. Correction of this deficiency coupled with the various items listed in Mr. Green's evaluation would constitute a major redesign of this equipment prior to the time it could be used for Project CORONA.

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4. Mr. Green mentions in paragraphs 9 and 10 of his evaluation report that the rollers of the ITEK machine should be fashioned of some material other than plastic and that the soft rubber covering of the rollers tends to climb up on the flange. It should be pointed out that Mr. Green has been forced to replace rollers in this equipment numerous times in order to keep it operational. He informs us that all of the spare rollers available to ITEK have now been used. Redesign, procurement and manufacture of suitable rollers would entail considerable time and expense.

5. At the time the ITEK processor was delivered to EK, Mr. Green requested engineering drawings or written instructions

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covering installation, operation and maintenance of this equipment. He was informed by [ ] that ITEK's contract did not cover the compilation or issue of a manual of instruction and that there were no consolidated copies of engineering drawings available. Lacking any other instructions, Mr. Green requested that ITEK provide someone familiar with this equipment to assist in installation and operation. ITEK sent [ ] to Rochester to work with Eastman. This precipitates comment on [ ] inference contained in paragraph 2 of his memo that the working relationship between Eastman and the ITEK leaves something to be desired. Prior to his retirement from the Air Force some 6 months ago, ITEK's representative [ ] operated the Eastman installation photo facility at Westover Air Force Base. [ ] attended a 30 day course of instruction at the Project facility at Eastman, was TALENT cleared and consequently, was intimately familiar with the processing with the equipment used to process all Project material. We have no reason to believe that the ITEK representative has not been extended the utmost cooperation by Eastman.

6. During the program review conference on 25 November, [ ] requested [ ] to discuss with Mr. Green any differences of opinion concerning the Eastman and ITEK processors. Mr. Green reports a rather cursory discussion as a result of Mr. [ ] request but did say that [ ] had asked that Eastman redesign the ITEK processor. Mr. Green reiterated the various design deficiencies on the ITEK item, said that in his opinion the machine required major redesign rather than modification and that Eastman would not be interested in the job.

7. [ ] memo also refers to his opinion concerning the ITEK and Eastman 70 mm printers. Again, an analysis of the ITEK printer was completed by Mr. Green and copies of this analysis (Attachment (2)) were handed out at the 3 November meeting at PIC. The controversy on the printer appears to rest solely on [ ] Mr. Green stated during the meeting on 3 November and subsequently, that the ITEK printer is an excellent device and that it can be used to good advantage to print Project CORONA material. This printer does, however, require minor modifications to obtain best results. Specifically, in addition to those items contained in Mr. Green's analysis (Attachment (2)), [ ] noted the following items which should be corrected:

There is a significant density variation across the format, i.e., less illumination on one side. Mr. Green stated

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that he was of the opinion that this difficulty originated in either the lamp source, a mirror being tilted or possibly inaccessible dirt on the optics. Again, as in the case of the processor, there were no operating instructions or engineering drawings available with the ITEK printer.

RECOMMENDATIONS:

1. The Processor

In view of the various discrepancies in both the design and operation of the ITEK processor, it is recommended that this equipment not be considered for use on Project CORONA. Mr. Green has available either the Eltron or the new Speltron to process CORONA material. He is convinced that his existing equipment and procedures will retain maximum detail of CORONA material. After discussing all phases of the processing operation with Mr. Green and inspecting the ITEK processor, [redacted] [redacted] are of the opinion that Mr. Green's existing equipment will do a better job than will the ITEK equipment.

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2. Printer

Prior to the meeting on 26 November at Eastman Kodak, [redacted] were unaware of any major controversy between Eastman and ITEK concerning the printer. It now appears that ITEK is concerned about a loss of resolution if the EK printer is used to duplicate Project CORONA material. As previously mentioned, the ITEK printer contains several minor deficiencies which possibly could be corrected by modification. Provided this equipment can be obtained from the Air Force, it is recommended that it be modified for use in duplicating CORONA photography. It should be pointed out that Eastman has available 3 different types of printers which could be used to duplicate CORONA material without deterioration of image in the event the ITEK printer modification is not completely satisfactory.

8. As a follow up to the visit to Eastman on 26 November, [redacted] will visit ITEK on December 2 and 3.

CONCUR:

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DPS/DCI  
Distr: [redacted] pf  
Orig - Mr. Bissell  
2 - Dep. Dir., DPS  
3 - Dir. D&P, DPS  
4 - Dir. OPS, DPS  
5 - [redacted] Chrono

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### **Analysis of FC-14 Processor**

The machine, manufactured by Hi-Speed Equipment for the ITEK Corporation to the design of Artisan Metals, is a variable speed continuous 70mm processor. We have been testing the proto type model for several months and if any additional machines are to be manufactured we would suggest that the following modifications be considered.

1. There are no splicing facilities within the feed cabinet, i. e., no block, tape holder, etc.
2. Back tension must be frequently adjusted, particularly with long rolls. But the tension adjustment is hidden behind any spool greater than 12 inches.
3. The carriage is quite heavy and is not counter weighted. Unless tracking and tension are exact the weight of this carriage will break the film when it drops. We believe that it should either be counterbalanced or dashpotted to prevent too sudden a drop.
4. Maintenance, threading, repairs, etc., are very difficult with the wet sections designed as they are. When a film break occurs it is almost impossible to repair and rethread the machine to save any material being processed. It would be better to make the access doors full length.
5. We do not believe that the densitometer can be used to determine processing requirements as it fluctuates widely and rapidly and cannot be easily evaluated.
6. The intake and exhaust of the dryer are both at the top of the cabinet and air circulation is very poor.
7. The takeup motor does not have enough torque to take up the large spools for which this machine was designed. We further feel that it is inadvisable to install the takeup motor within the drying cabinet.
8. It is extremely difficult to keep slack from building up within the machine and to keep the film from leaving the rollers. We have changed the pulley size on the drive roll in the dryer

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Analysis of 70-15 Processor

so as to overdrive the film at this point. This has considerably helped the slack condition locally and we suspect that the speed of the other drives should be changed to overdrive.

9. The soft rubber covering of the rollers tends to climb up on the flange of the rolls and otherwise bunch up so as to mark the film.
10. We feel that the rollers should be made in some other fashion as they now tend to revert to their original shape with age. They also deform quite easily in the drying cabinet.
11. Strainers should be installed in all pump in-takes.

Of all of the above, the principle difficulty seems to be that of maintaining proper tension through out the machine.

It is absolutely impossible for a machine of this kind to transport thin base film through it because of the tendency of the film to ride up on the flanges. We also question whether continuous transporting of perforated film is feasible. We have not, however, made any extensive tests.

R.L.G.  
10/31/58

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**Analysis of ITEK Printer**

This is a Photo Devices 70mm printer modified by ITEK and incorporates exposure control.

This exposure control is difficult to keep in adjustment and requires reasonably frequent maintenance. Some shutter "bounce" occurs at frame lines.

Other than the above we have only two comments:

1. The raw stock magazine scratches the film.
2. We feel that the proposed threading diagram is incorrect and that the raw stock should go directly to the printing drum.

With the above changes and more experience with the exposure control, the printer should be an excellent machine.

*ENCL #2*

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HLG  
10/31/58